Accounting Information System (AIS) Alignment And Non-Financial Performance In Small Firms

Dekeng Setyo Budiarto *dekengsb@gmail.com*
PGRI University Yogyakarta

Abstract

The objective of this research is to investigate the effect of Accounting Information System (AIS) alignments on non-financial performance in Small and Medium Enterprises (SMEs). The result of this research is expected to help the owners of SMEs to understand the importance of AIS alignment to achieve non-financial performance. AIS alignment is influenced by several factors such as: organizational characteristics, owner commitment, and organizational strategies that effect on SMEs performance. The effect of AIS alignment on performance is explored using data collected from SMEs owners in the Special Administrative Region of Yogyakarta (DIY). The result of this research shows that AIS sophistication, owner commitment, and external IT expertise have significant effects on AIS alignment. AIS alignment also has significant effect on non-financial performance.

Keywords: Accounting Information System, Alignment, Non-Financial Performance, SMEs.

1. INTRODUCTION

Accounting systems play a critical role in the success of the business organization, as they provide information that supports the efforts of the organization in achieving the expected goals [1]. It is asserted that AIS produce useful information, in which they serve as a basis for the management for strategic decision making [27] and exercise control of organizational activities in order to achieve organizational objectives [13]. Modern AIS, however generate various types of information, including accounting and non-accounting information to assist the management to cope and integrate short term and long term strategic planning [2]. Nevertheless, AIS is part of information technology as it is based on information and communication technology [1].[1] According to the information processing theory, alignment of AIS is needed to have significant impact on the organization performance [17]. Fit between AIS strategy with firm strategy will provide managers with better information to make quality decision and increase efficiency to achieve organizational goals.

The objective of this study is to identify owner commitment, AIS sophisticated and external IT expertise that might lead to AIS alignment on performance in small firms (SMEs). Many studies have examined issues surrounding the provision and use of accounting information systems in the context of small and medium sized enterprises (SMEs). Sharma and Rajat [29] aim to develop a framework for information system (IS) performance; Lee, Sang, Jinhan, Yeonog, and Sang [21] examine the effect of information technology (IT) knowledge on process performance and financial performance; Dibrell, Peter, and Justin [10] investigated the effect of IT investment on performance. In previous research, financial performance measures have many problems or shortcomings. Financial performance evaluation systems tend to report historical short term performance [20], which could not predict future performance, lack relevance to advanced technologies, and are inconsistent with quality and flexibility strategy, but have now become important to a firm's success [7]. Financial performance, such as cost efficiency, may increase the pressure on managers to undertake moral hazard into maximizing short term results [32].

[1] AIS is similar term to Management Information System (MIS) and Management Accounting System (MAS) [26].

Therefore, Choe [7] proposed that non-financial performance information is required. Non-financial performance measurement systems are more appropriate than financial measurement systems. Miller [25] and Bledsoe [3] suggested that non-financial performance provides various strategic benefits such as quality improvement and shorter delivery times. Non-financial performance can be measured by quality, cycle time, productivity, and customer satisfaction. It is describing the strategy and is developing a unique set of performance measures that clearly communicate the strategy [20]; [30].

Although research on the IS-performance is more abundant in large firms, it becomes particularly important in small firms to give competitive advantage [13]. The use of AIS within small firms has been developing similar to that in large firms [17]. However, IS adoption, development in the large firm context, cannot be equally applied to small firms [34]. The main problem faced by SMEs is the lack of capital and technology obsolescence [36]; limited financial resources and little management information [22]; access to scale economies is more difficult and management attitude is not IT-oriented [12]; [24]; and a lack of funds to acquire skill [9].

Many previous studies have struggled to show a direct impact of AIS on financial performance. However, very little studies examined the relationship between AIS alignment and non-financial performance. Hussin, King, and Cragg [16] focused on the alignment of business strategy and IT strategy. The study suggests that IT maturity and the level of the CEO's software knowledge has an effect on the IT alignment, but external IT expertise doesn't have a significant effect. Ismail and Malcolm [17] suggest that aligning information improves a firm's performance of SMEs in developing its economies. There is no literature that combines AIS alignment and non-financial performance, so this is an open empirical equation. This study is based on previous research, to explore the direct relationship between AIS sophistication, owner commitment to AIS, external AIS expertise on alignment of AIS and non-financial performance.

In a rapidly changing environment, firms must develop new technologies to adapt with the new environment [19]. Investment in IT is one of the possibilities to achive a stronger and more flexible business culture. In contrast, firms are not only using IT intensively for accounting issues but also very interested in more sophisticated IT [11]. The IT sophistication embraces a wide landscape and has important implications for the management of organizations, create or revolutionize markets and demands [5]; supplied relevant information to managers [4]; [2]. Different types of application such as budget variance, production variance, and production planning will be integrated in large firms [2]. Nevertheless, the lack of skill in small firms became a problem, so a sophisticated technology was needed.

Lim [23] reveal that large firms have more budget to design, test, and implement new technology. The strength of financial resources in large firms with IT departments will accelerate the development of new technology. Therefore, IT knowledge of owner is unnecessary importance in large firm, that different from small firm. The result of a lack of financial resources in small firms is that the implementation of technology depends on the owner. According to Delone [9], the owner is a key to the implementation of IT. In a firm where the owner is familiar and involved with IT, the IT implementation is more successful. Thong [34] shows that one of the main factors contributing to the adoption of technology is the IT knowledge of the owners. In order to survive, SMEs owners need updates, accurate, and timely accounting information for decision making purposes. The adoption of accounting information would ensure proper accounting practices, as good accounting practices have several implications for SMEs manager's [1]. Chu [8] reported that most family firms are SMEs that have more than 5% family shareholding and at least one family member on the board of directors, who plays a significant role on the technology innovation more than non-family firm. In small firms, the owner's responsibility is more immediate in the development of information and technology to achieve organizational performance.

Lim [23] state that IT labor expenditure is part of the IT investment and requires to develop technology. Large firms can improve the human resources in technological ability by providing specialized training, which is difficult for small firms. The IT training for employees will reduce the

dependence on technology implementation with external IT expertise. The main problem faced by small firms are less technical knowledge or skills and oblivious to the benefits that IT can bring, because of the limitation of human resources they have. Hence, managers who have an aptitude for technology will take less help from external consultants, which makes the implementation of AIS quicker and less costly [28].Thong [34] argues that IT success was most likely to occur when external IT experts worked as a team with the senior manager to integrate information in the firm. This cooperation could improve business efficiency and increase a better return on investment and business performance [37]. Another finding of his is that external expertise is not associated with IT success [9]. Small firms in Ghana usually process financial information by chartered accountants to handle their accounting information [1], hence, technical support, training, and a harmonious working relationship with consultants can reduce the risk of IT failure in small businesses.

This study is undertaken to examine AIS alignment in small firms, and investigate the determinants that influence the alignment. Other authors have used the term IT alignment with a variety of different aspects. Ismail [18] measured alignment by matching AIS requirements and AIS capacity. In this study, IT alignment refers to the fit of small firm IT strategies with a business strategy according to the moderation model. The moderation model was less ambiguous and more widely applicable, compared with the matching. The moderation model could explain variations in performance by examining business strategies and IT strategies. IT alignment and business strategy are the main components that contribute towards growth among small firms, and their alignment with IT can be used as a strategic weapon to maintain their competitiveness [16].

A recent study has pointed out that the challenges of successful development in the information system depend on the availability of technological infrastructure that could improve the business performance [13]. According to several authors, it is of great interest to analyze the impact of AIS alignment on non-financial performance. This paper attempts to contribute to the accounting information literature in several ways. First, this research provides empirical evidence on how the alignment of AIS relates to performance. Second, this research provides evidence in favor of contingency approach, through a more integral explanation between AIS and performance, and the determinant of the alignment of AIS. Finally, previous researches suggest that IT maturity and the CEO software knowledge are determinant factors of AIS alignment [16]. The AIS alignment has an impact on the performance of a firm [18]. This research directly tests the presence of the relationship between AIS alignment and determinant factors on small business performance. The structure of this article is as follows: the first part involves a brief bibliographic overview of alignments of AIS on performance, the second part presents a statistical analysis, the third part presents the results, discussion, and the draw of the main conclusions.

2. RESEARCH MODEL & HYPOTHESIS

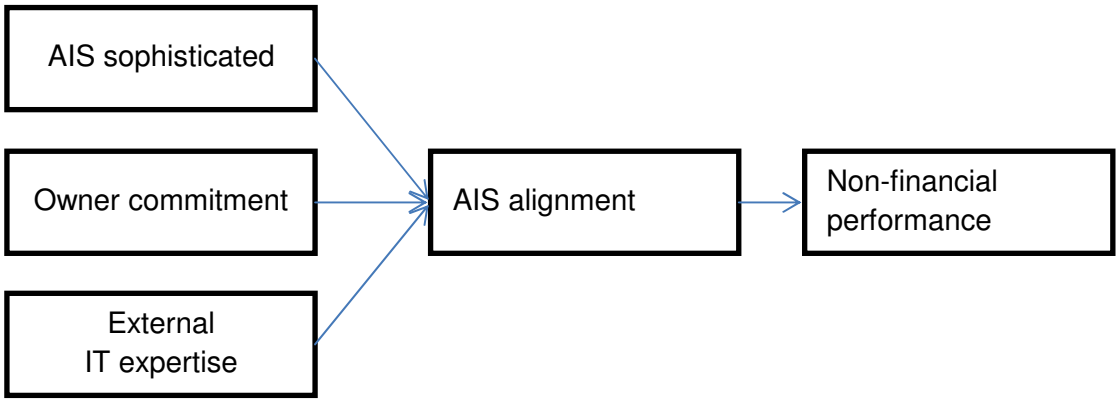
2.1 AIS and SME Performance

The AIS provides management with financial information to examine, plan, evaluate, and diagnose the impact of operating activities and identify the financial position of the organization [26]. Accounting information can help businesses, particularly SMEs to manage short term problems in areas such as costing, expenditure, and cash flow, by providing information to support monitoring and control [17].

Performance measurement in SMEs is the measurement of the expected improvement in business activities by implementing an information system. Moreover, the implementation of information systems helps SMEs to improve the performance by integrating various functional areas of day to day business, both in terms of material and information flow [29].

The conceptual and empirical research is addressed on a wide variety of accounting and IT issues in SMEs, however, there is a lack of understanding of alignment in accounting information systems. To overcome this issue, this study will: first, investigate an antecedent factors that

influence the AIS alignment, then explore the fit between the business strategy and AIS strategy as represented by the AIS alignment, and finally examine the impact of AIS alignment on the non-financial performance of SMEs. The conceptual model of this research is depicted in figure 1.



2.2 AIS Sophisticated and AIS Alignment

IT sophisticated is the moderating effect between strategy and performance. A firm that faces uncertainty on the market demand and complexity in the environmental questions, needs more sophisticated technology [27]. A high sophisticated of AIS design provides information, which integrates among different organizational functions, to cope with the uncertainty, and optimizes the decision making process [14]. Another finding, [37]; [2] reveals that the sophistication internal IT infrastructure within SMEs will provide AIS sophisticated. When companies have technology, AIS will be designed by taking into consideration these technologies, to achieve organization effectiveness.

IT sophistication covers a wide field and has important implications for the management of an organization. Firms need to face a number of challenges in order to be categorized as technologically sophisticated; first, the business requires a strong scientific-technical base; second, new technology can quickly make existing technologies obsolete; and third, as new technologies come on stream, their applications should create or revolutionize markets and demands [5]. Organizations with more sophisticated IS tend to perform more successful than those with less sophisticated system, the greatest alignment will improve efficiency to achieve high performance [22]. Al-Egab [2] found a positive relationship between AIS sophistication and AIS design. A direct linkage between IT sophisticated and IT alignment was established by [16]. That study suggests a relationship between alignment and aspects of both IT sophistication and IT management, through the variable types of technology. This provided evidence of the sophistication of AIS having greater effect on AIS alignment. Based upon the arguments above, the hypothesis 1 can be proposed as follows:

H1: There are significant positive effect of AIS sophistication on AIS alignment.

2.3 Owner Commitment and AIS Alignment

In small business, the CEO is usually the owner-manager [34]. The owner-managers interest is in the enthusiasm being the prime of IS adoption to support SMEs successful. The owner invests in information systems to control business expenses and revenue with word processing and accounting spreadsheets [22]. Managers should increase their knowledge and understanding about IT to implement their firm's strategies and they must be cognizant of the necessity to create systems and processes to most effectively optimize the IT usage [10]. In SMEs, characteristic of the owner are crucial in determining the technological innovation. Hence, small business changes depend not only on factors such as the business size but also on the IT abilities of the owner [34]. Ismail [18] suggests that in many cases, the firm's information systems, the processing capacities were insufficient to match their AIS requirement, which has important consequences for future

investments in IT. This mismatch also indicates that managers in SMEs must clearly be able to distinguish between AIS requirements and the AIS capacity for the chosen information characteristics. It is important to assess the alignment of AIS. A direct linkage between owner commitment and IT alignment was established by Hussin [16]. The study shows a relationship between the owner commitment to IT and IT alignment. The owner knowledge of software would affect in the firm technology alignment. The evidence suggests that software knowledge is important for the IT alignment. Based upon the arguments above, hypothesis 2 can be proposed as follows:

H2: There are significant positive effect of owner commitments on AIS alignment.

2.4 External IT Expertise and AIS Alignment

A direct linkage between external IT expertise and IT alignment was established by Hussin [16]. Nevertheless, these study does not find any significant relationship between external IT expertise and internal IT alignment. Other research Chang [6] shows that the right choice of an external provider of IT has a positive impact on the productivity and performance. SMEs require more often external IT/IS service providers than large enterprises. Therefore, the search for SMEs IT outsourcing service should comply with their operational model demand. Firms should choose external IT expertise carefully as excellent service quality is a crucial factor in making a successful selection. Amidu [1] observe in Ghana that SMEs use accounting information to generate their financial information. Ismail & Malcolm [17] found positive relationships between external IT expertise and internal AIS alignment. The study revealed that almost all the sampled SMEs employ external accountants to handle their accounting information. This is exercised because SMEs have limited human resources. Based upon the arguments above, the hypothesis 3 can be proposed as follows:

H3: There are significant positive effect of external IT expertise and AIS alignment.

2.5 AIS Alignment and Performance

A firm's performance will increase when there are synergies among the elements of a system. To achieve this, SMEs need an AIS requirement that is aligned to their AIS capacity. An alignment will occur when there are synergies between the strategy, structure, management process, technology, and skill [22]. Dibrell [10] suggest that owners who are able to integrate either a product or process oriented innovation strategy with investment in IT/IS would enhance the firm's performance.

Ismail [17] found in his study of SMEs that a significant proportion of Malaysian SMEs achieved high AIS alignments. Furthermore, the group of SMEs with high AIS alignment achieved better organizational performance than firms with low AIS alignment. Ismail [18] suggests that aligning the information processing capacity with the perceived information requirement has contributed to improve the firm performances of SMEs in developing economies. Choe [7] suggests that there are significant positive relationships between the level of information provided by AIS on non-financial performance. Through his theoretical examination, the author argues that AIS alignment directly influences a firm's performance. Based upon the arguments above, the hypothesis 4 can be proposed as follows:

H4: There are significant positive effect of AIS alignment on non-financial performance.

3. METHOD

A positivist view was adopted in this study based on its assumptions on particular social reality, such as attitudes of AIS used and their performance. Quantitative strategy adopted in the questionnaires is always associated with positivist research [26]. SMEs definition refers to criteria of the legislation (UU no 9/1995) with owned enterprises, maximum turnover of 1 billion rupiah, maximum net assets of 200 million rupiah, with a number of employees between 5 and 19 for small firms and 20-99 for medium firms.

The research model is described in four constructs; AIS requirement, AIS capacity, AIS alignment, and non-financial performance. AIS alignment will be described as a derived construct but each of the other to be measured directly, and they were operationalized on the research instrument as follow:

3.1 AIS Requirement and AIS Capacity

Since the business strategy was measured by using 10 items, and 10 matching items were used to measure AIS alignment, it was possible to explore how important a specific accounting information item was to a firm and how well this information was supported by their computer based information systems [16]. In this study, the responses for point '4' and point '5' of the five point scale for the business strategy and AIS strategy items are treated as one category called 'strongly agree'. Similarly, point '1' and point '2' are treated as one category called 'strongly disagree'. The point '3' is called a 'neutral' category. The questionnaire developed by Ismail and Malcolm [16] with 10 questions about: focus, orientation, time horizon, aggregation, timeliness, financial, non-financial, quantitative, and qualitative [17].

3.2 AIS Sophisticated

Naranjo [27] states that organizations operating in uncertain environments, more than other organizations, will need high information technology sophistication. AIS sophistication was measured by using questions proposed by Ismail and Malcolm [18]. Using a 5 point scale (1= no sophistication; 5= high sophistication), respondents were asked to indicate their level of participation in the following 2 areas: office support system, and accounting application.

3.3 Owner Commitment

The owner is an entrepreneur figure who is crucial in determining the innovative attitude of SMEs [33]. The owner commitment was measured by using questions proposed by Hussin [16]; Ismail, Malcolm [17]. Using a 5 point scale (1= no participation; 5 = high participation), respondents were asked to indicate their level of participation in the following four areas: definition of needs (information requirements), selection of hardware and software, implementation of systems, and planning for future IT development.

3.4 External IT Expertise

Small firm would use external IT expertise, such as consultant and vendor [34]. The questionnaire were asked to respondents to measure depend on external IT advice used by their firms [16]; [17].

3.5 AIS Alignment

The previous research shows that alignment can be examined from several approaches. Ismail [17] measures accounting information requirements as processing capacity as represented by AIS requirement, and measure of accounting information systems processing capacity as represented by AIS capacity, fit between AIS requirement and the effect of AIS capacity on AIS alignment. Ismail [18] explores AIS alignment using the matching approach, the fit between AIS requirement and AIS capacity referred to as AIS alignment. Hussin [16] developed a survey to measure IT alignment, the fit between business strategy and IT strategy as represented by IT alignment.

The matching and moderation perspectives have been used by a number of researchers, and other perspectives are still in their exploratory stages and require further development [17]. In this research, the moderation perspective of measuring fit was adopted to measure the alignment between AIS requirement and AIS capacity. The AIS alignment using the moderation approach was measured by multiplying the rating for AIS requirement items with the corresponding AIS capacity items. In this case, high alignment results from high ratings for an AIS requirement and high rating for AIS capacity. Low alignment scores result from low rating AIS requirements and low AIS capacity items.

3.6 Non-Financial Performance

Based on previous research [7] four non-financial performance of information produced by AIS were specifically selected. They are; incidences of product defects, improvement of product quality, number of product return, and rate of material scrap loss. Respondents were asked to indicate on five point Likert scale, anchored on 'no amount of information' and 'very large information'.

4. DATA ANALYSIS & DISCUSSION

4.1 Data Collection

The data collection in this study employed a purposive sampling technique where the author selects particular elements using particular criteria. The criteria are as follows: 1) the objects of the study are SMEs located in Yogyakarta; 2) the respondents are owners/managers of SMEs. The survey conducted generates 86 returning questionnaires. Of the 86, only 53 questionnaires can be further analyzed, since the remaining 33 are incomplete.

4.2 Respondent Demography

The analysis generated the following respondent demography: 4 (7,5%) enterprises have been in operation for less than 3 years; 20 (37,7%) enterprises for 3-5 years; 29 (54,8%) enterprises for more than 5 years; 51 (41%) enterprises have less than 10 employees; 76 (59%) enterprises have more than 10 employees. The majority of enterprises (70,2%) are in the initiation level, 18,3% in diffusion level, and the remaining 11,5% are in the integration level.

4.3 Validity and Reliability Testing

Validity testing in this study was conducted using product-moment correlation at the 5% probability level. The results indicate that all questionnaire items were valid with $p < 0,05$ (see the table in Attachment 1). Reliability testing in this study used Cronbachs Alpha with a minimum acceptable limit of 0.6. The results of validity testing demonstrated the Cronbachs Alpha value of 0.730 for AIS sophistication variable; 0.621 for owner commitment; 0.638 for external IT expertise; 0.790 for AIS requirement; 0.881 for AIS capacity; and 0.715 for non-financial performance. Those results indicate that all variables have a reliability above the predetermined value.

4.4 Hypothesis Testing

Hypotheses testing in the current study employed two regression models. Model 1 is used to test hypothesis 1, 2, and 3, and model 2 for hypothesis 4. The results of hypothesis tests are presented in the table below:

Relationship	T value	P value	R2
AIS sophistication → AIS alignment	3,315	0,003	0,374
Owner commitment → AIS alignment	2,687	0,010	
External IT expertise → AIS alignment	2,166	0,035	
AIS alignment → non-financial performance	15,079	0,000	0,813

TABLE 1: Results of Hypothesis Testing.

Based on Table 1 above, AIS sophistication was found to have a positive and significant effect on AIS alignment with p value of 0,003 (hypothesis 1 is supported). The results of this study confirm the previous studies by Hussin [16]; Al-Egab & Noor Al [2]. Owner commitment has a positive and significant effect on AIS alignment with a p value of 0,010 (hypothesis 2 is supported). The results also corroborate other works by Hussin [16]; [17]; [22]. IT expertise, the external variable in this study, has significant effect on AIS alignment, with p value of 0,035 (hypothesis 3 is supported). While the results confirm the study of [16]. AIS alignment have a positive and significant effect on non-financial performance with p value of 0,000 (hypothesis 4 is supported). The results confirm previous works by Choe [7]; Ismail & Malcolm [18]. They indicate that the average AIS

requirement by 3,65 and AIS capacity by 3,77 are in the same interval2.This indicates that there is a correspondence between needs and capacities of the SMEs'AIS.

4.5 Discussion

The results demonstrate that hypothesis 1 is supported; that AIS sophistication has a positive and significant effect on AIS alignment. The results also indicate that SMEs have been using AIS either for daily transactions (sales and receivables) or monthly transaction (employees' salary and inventory calculations). Both daily and monthly capacities of accounting information capacity have been in conformity with the information requirement. Based in the developing countries, this research consistent with similar result about the IT sophistication and alignment of AIS [16]; [2] it argue that IT sophistication has significant effect on AIS alignment.

The results indicate that hypothesis 2 is supported; that is, owner commitment has a positive and significant effect on AIS alignment. Owner commitment to technological sophistication greatly influences the development of SMEs in terms of technological implementation, particularly that of AIS. SME owners who are familiar with technology can perform the planning and evaluation of the usefulness of technology to pave the way to the technological implementation in their enterprises. SMEs owners need more fit information to support the decision with higher uncertainties, Ismail [17] the right information that selected by the owners can reduce uncertainty and expenses of the organization. Owner participation in the problem solving stage was found to be significantly greater in the aligned firm [18]. The result also supports the findings of Hussin [16] where an appreciations of the owner influence with IT alignment.

The test of hypothesis 3 indicates that external IT expertise has significant influence on AIS alignment. The results provide the evidence that the use of AIS remains highly dependent on the owner's will, sophistication & IT consultant. Some of the SME owners stated that the AIS (or the technology) they have bought can be properly used for a relatively long period. External IT expertise will be used in case of disruption. Importantly, at the development stage of IT, the use of IT consultants is still needed, nevertheless the development of information system (technology) still not optimal. The owners assume that the technology they are using still run well with having to upgrade the software by external IT expertise. Ismail [18] for example, argued that gaining expert advice and assistance from relevant government agencies and accounting firm can help SMEs achieve better alignment. But, this result did not support Hussin [16] argument that external It expertise have little influence on IT alignment.

The test of hypothesis 4 demonstrates that AIS alignment has a positive and significant influence on the non-financial performance. AIS compliance could be realized with the fit between the capacity and the information required. Available information on the products manufactured will be related to the information on the sales, production level, and the profit obtained. Information on the supply will be related to the information on the defected raw materials. Those interrelated information may improve the SMEs' non-financial performance. The result of this research consistent with Ismail, [17]; [18] argue that Malaysian SMEs with high AIS alignment had achieved better organizational performance. Other relevant result is Choe [7] which proves that management information systems can improve the non-financial performance, even though the studies was conducted in large organization, but the result can be uses as SMEs research references.

4.6 Implication

This study generates implications for future researches that the SMEs' non-financial performance may complement the financial performance, thus both performance measurements are equally important and useful. Performance measurements, both financial and non-financial, are expected to contribute to better SMEs' development. The results indicate that owners' commitment to information technology sophistication has a significant influence on the proper use of accounting information system. Therefore, the development of SMEs necessitates the government role in

[2] Five-point scale measurement (1-1,8=poor; 1,81-2,6=fair; 2,61-3,4=good;3,41 -4,2= very good; 4,2-5=excellent)

providing the training on information technology for SME owners. Many past studies have tries to find the effect of AIS alignment on financial performance, so if a link between AIS alignment on non-financial performance it will suggest a gap for future study.

4.7 Limitation

Some of limitations of this study can be seen as fruitful feedbacks for future researchers: 1) this study did not divide the SMEs' business types. The results would be much better if the study classified SMEs into service, manufacture, and trade categories because the type of business affects the use of information technology; 2) the majority of SMEs are in the initiation level, which means that their planning and control of accounting systems are lacking. For future researches, it would be better if they assess each of the level (initiation, diffusion, integration) to determine the effect they have on AIS compliance; 3) this study did not analyze the size of enterprise. The larger the enterprise, the easier is the use of information technology; and 4) this study did not examine the frequency of technology replacement (upgrading), and therefore is undecided as to whether they are using the latest technology or the obsolete one.

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